

**REMARKS/ARGUMENTS**

Reconsideration of this application is respectfully requested.

In response to the rejection of claims 1, 3-6, 8-12, 14-17, 19-27 and 29-33 under 35 U.S.C. §112, second paragraph, extensive claim amendments have been effected above so as to obviate each of the Examiner's stated grounds of objection/rejection.

The term "such that" is believed to be clearly definite and understandable to those versed in the English language. The phrase "such that" is commonly used in everyday conversation, as well as in formal legal documents of many different kinds (including claims of issued U.S. patents).

Nevertheless, the claims have been amended above so as to avoid all use of the phrase "such that". Should the Examiner find any continued use of that phrase, then the Examiner is invited to telephone the undersigned for prompt resolution should any continuing concern about indefiniteness remain.

The reference to "a node" at claim 1, line 7 has been amended so as to clarify that it is a newly joining node to which the claim refers – albeit this fact is also clearly self-evident.

Although the recitations in former claim 1 describing what a node of a network comprises is definite, such language has been deleted from claim 1, thus avoiding this ground of objection. Where this language has been reinserted in new claims (possibly

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Serial No. 10/530,472  
July 12, 2010

with some clarifying wording changes), it is also believed to have clear and definite meaning.

Claims 32 and 33 have been cancelled without prejudice and/or disclaimer, thus avoiding all allegations of indefiniteness with respect to those claims.

Accordingly, all outstanding formality-based issues are now believed to have been resolved in the applicant's favor. Should the Examiner continue to find any formality-based issue, it is respectfully requested that the undersigned be telephoned for discussion and prompt resolution.

The rejection of claims 1, 3-6, 8-12, 14-17, 19-27 and 29-33 under 35 U.S.C. §103 as allegedly being made "obvious" based on Gregerson '351 in view of O'Toole '273 is respectfully traversed.

Instead of being directed to an individual node, most of the claims now claim a network and the cross-allocation of nodes. This clearly is not taught in any of the cited prior art. The Examiner is respectfully reminded that a network having a particular topology is not the same as the claimed dynamic network growing under particular constraints so that connection rules imposed by the claimed invention are applied. Just because a prior art network is shown with similar connections at some instant does not mean that, when a new node joins that network, it has the same connection rules imposed.

Independent claims 1 and 12 are directed to a physical network of nodes and to a method of operating a network of nodes, respectively. In addition to changes in wording, these claims now further incorporate the following limitations:

*"wherein the above connection rules constrain the network topology as it grows to a desired size by cross-allocating unused links within each level of the network hierarchy until they are needed to provide an access point for new nodes; and*

*wherein each node in the network has the same number of first neighboring nodes."*

This additional limitation finds support from the description and claims originally filed. See, for example, the arguments presented previously for supporting amendments to the claims and for the additional limitation see the description generally and also the specific text on page 3, line 29 to page 4, line 4 of the specification.

The features of a node itself (e.g., which previously appeared in claim 1) have now been captured by a new dependent claim 34.

Similarly, the operation of a node (previously found as part of independent method claim 12) as it joins the network has been captured by a new dependent claim 35.

Claim 1 as previously presented has been amended for clarity in view of the Examiner's comments and appears as a new independent claim 36 which is directed to

a network node. A similarly worded independent claim directed to the network itself appears as new claim 37.

New claim 38 comprises the wording of original claim 1, but is now directed to a network of nodes and includes the same new limitation noted above now in the other independent claims, which finds basis in the specification at page 3, line 34 to page 4, line 2.

The term "unused" has been omitted from the amended claims although this appears in the specification because it is clear from the text on page 4, lines 2-4 that the links which are cross-allocated are used, and if this wording was retained, it might cause confusion as to the scope of the claims (in other words, the cross-allocation results in additional cross-allocated links that are quite clearly "used").

The Examiner has asserted that the phrase "wherein the network has a topology type in which each node joining the network is constrained by the same connection rules to have a maximum number of k connections" is taught in Gregerson by the phrase:

*"The present invention is a dynamic, symmetrical, distributed, real-time, peer-to-peer system comprised of an arbitrary number of identical (semantically equivalent) instances, i.e., kernels, that together form a logical tree e.g. Figures 14, Col. 2, lines 50-54)."*

However, this passage does not refer to a network in which connection rules are imposed on nodes which enable the network to grow by cross-allocating unused

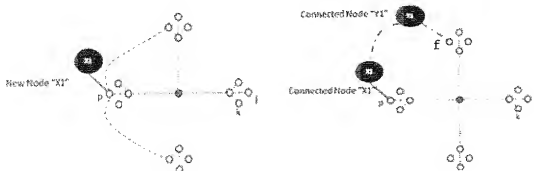
connections within each level of the network hierarchy whereby, as the network grows, when a new node requests to form a primary connection with a peripheral node already in the network, the peripheral node disconnects from a previously made connection, and the new node then requests further connections to other nodes at the same hierarchical level as its own in the network so that it too has the predetermined number of minimum connections.

Moreover, nothing in any of the cited prior art (i.e., neither Gregerson nor O'Toole) teaches a network in which such connection rules are communicated to and imposed on each node joining the network to ensure that the network topology continues to maintain these predetermined rules. None of the cited prior art teaches re-allocating lines to maintain a predetermined number of links between all of the nodes in a network hierarchy when a new node joins the network in the manner of the claimed invention.

Gregerson teaches a dynamic, symmetrical system in which, once a new node joins, it is accessible to all the other nodes in the network. However, the claimed invention is by its very nature not necessarily symmetrical. A symmetrical network could be one result of imposing connection rules – but these connection rules would not be the same as those imposed by the claimed invention.

For example, consider the exemplary network topology shown in applicant's Figs. 1a and 1b, which are symmetrical. Now imagine a new node, say "X1", requests to join

node P as shown below (on the left-hand side) in which some of the connections shown in Fig. 1b are omitted for clarity. The claimed connection rules do not result in the network being symmetrical – indeed, the result is quite clearly not symmetrical! Firstly, in order for node P to form a primary connection with new additional node “X1”, node P has had to re-allocate the “unused” link it previously had with node k (which is shown in Fig. 1b) so that this link can be now connected to new node X1.



Moreover, consider what happens when another node, say Y1 requests to join node f (see Figs. 1a and 1b for the nodal labels) as is shown in the right-hand side above. Again, it is quite clear from this sketch that the constraints imposed do not result in a symmetrical network topology. All that has been imposed is a connection rule that ensures that at a node tries to form additional connections at the same level of the network hierarchy by cross-allocating unused links. Thus when node Y1 joins, it not only forms a connection with node f, but it also forms a connection with node X1 as this is at the same level of the network hierarchy.

While the claimed connection rules ensure that when node X1 asks to join node P, node P re-allocates a connection and they (the connection rules) are also imposed on the new nodes (e.g., "X1" and/Y1" in this example) as they join the network so that each node also forms at least four connections. That is, three additional connections are allocated with other nodes. However, the resulting topology is definitely not necessarily symmetrical (particularly as the hierarchy becomes larger so that more levels exist between peripheral nodes and the central node).

Accordingly, the amended claims are both novel and non-obvious over Gregerson and O'Toole inasmuch as neither of these documents teach (either independently or in combination) the limitations presently incorporated into the claims, which refer to imposing network connection rules that propagate autonomously from node-to-node as more nodes join the network.

Given the fundamental deficiencies of both cited references with respect to aspects of independent claims as discussed above, it is not necessary at this time to discuss additional deficiencies of this allegedly "obvious" combination of references with respect to other aspects of the rejected claims. Suffice it to note that, as a matter of law, it is impossible to support even a *prima facie* case of "obviousness" unless the cited prior art at least teaches or suggests each and every feature of each rejected claim.

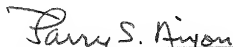
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Serial No. 10/530,472  
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Accordingly, this entire application is now believed to be in allowable condition,  
and a formal notice to that effect is earnestly solicited.

Respectfully submitted,

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